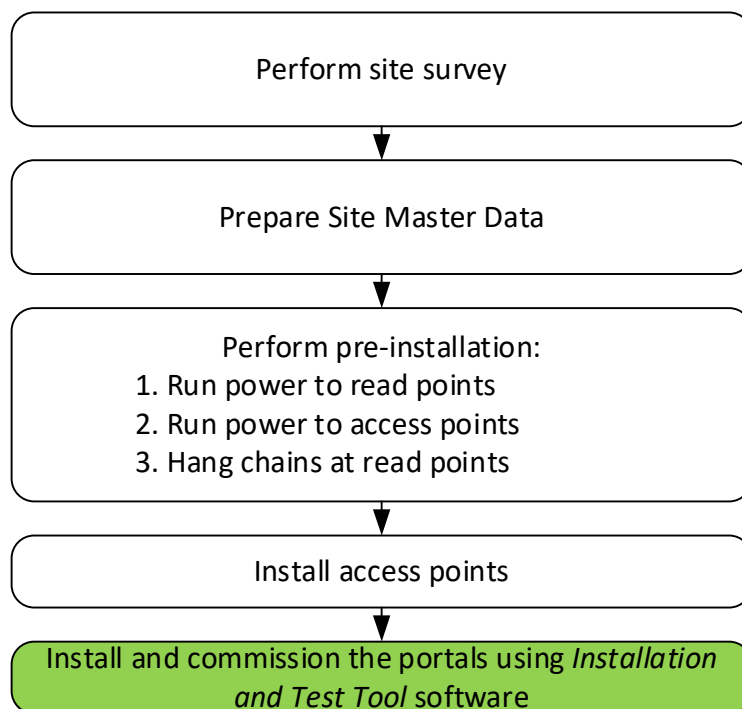


RTLS INSTALLATION

RTLS Portal Installation Guide



REVISIONS

Revision no.	Date	Author	Changed pages	Description of change
1	2018-05-30	MAH		Created based on 077.208.064
2	2018-09-13	MAH	Annex C	Added test tags description.
3	2019-01-31	MAH	Annex B	Added guide for taking installation pictures.
4	2019-02-14	TPA	2, Annex D	Added FCC / ISED Regulatory Statements.
5	6-Dec-2021	TPA	several	Added the LS45x0 G2 versions. Minimum separation distance to the operators increased to 55cm due to the addition of the cell modem.
6	31-Oct-2023	DFE	Annex D	SAR - notes

1. INSTALLATION OF RTLS PORTALS

1.1. Before starting

Please observe the following:



- The RTLS portals must be installed and used in such a way to ensure minimum 55 cm separation from users / bystanders.
- RTLS portal installation must be performed with directions from the Installation and Test Tool or ITT, which is a web based application.
- Site survey data must be imported for ITT to function properly.
- The WiFi network set up by the RTLS access points must be operational and online. Alternatively, for RTLS Portals versions which include an LTE mobile radio inside, the LTE signal must be available at the chosen installation location (stronger signal ensures more reliable communication).
- Make sure that a site overview drawing is available from the site survey to help find installation locations.
- Power on the portal only when instructed so by ITT.
- All access points must be installed before installation of RTLS portals can begin.

1.2. RTLS Installation Flow

The RTSL installation is performed using Installation and Test Tool, ITT.

Read about the Installation and Test Toll in the 077.208.10v RTLS Installation and Test Tool Guide.

The installation follows the flow in Figure 1.

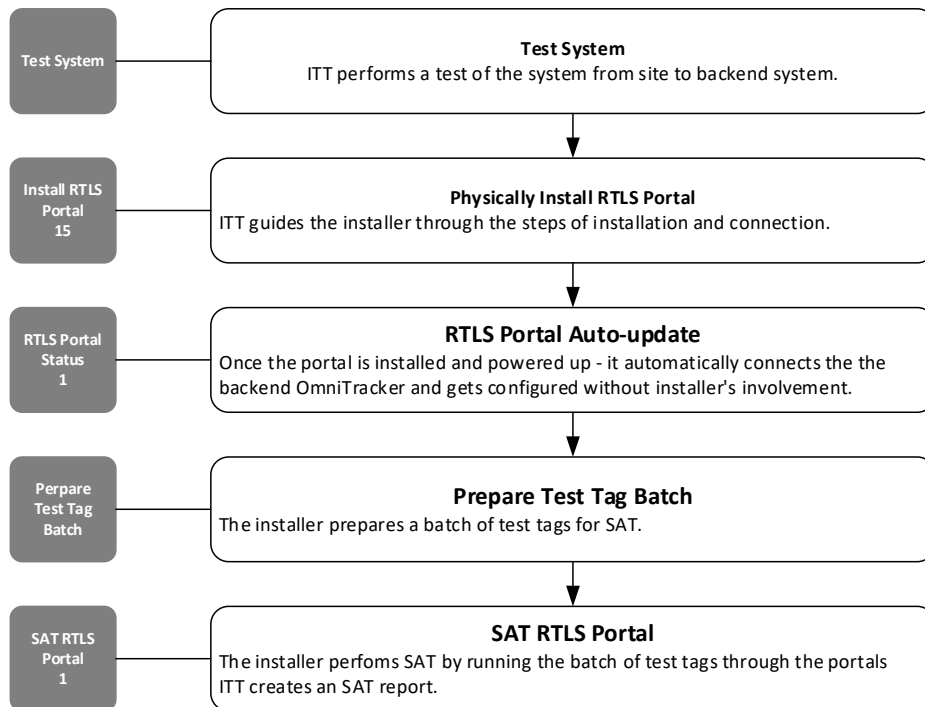


Figure 1. RTLS Installation Flow.

Read about the RTLS portal hardware in ANNEX A, e.g. product numbers and identifying the hardware parts.

Read about taking useful pictures of the installation in ANNEX B.

Read about the test tags for the installation process in ANNEX C.

ANNEX A. HARDWARE DESCRIPTION

A.1. Product numbers

The following products are included in this installation guide:

- LS4510 & LS4510 G3 (all versions): RTLS Portal
- LS4530 & LS4530 G3 (all versions): RTLS Portal
- LS4550 & LS4550 G3 (all versions): RTLS Portal
- LS9310: Lyngsoe WiFi access point

A.2. RTLS Portal versions

Feature	LS4510	LS4530	LS4550
Passive RFID Reader	●	●	●
Active LS Exciter		●	●
Active LS Reader			●

Figure 2. Portal features (G3 included too).

A.2.1. LS4510 & LS4510 G3 RTLS Portal

This is a passive-only portal that incorporates a passive reader and two antennas.

A.2.2. LS4530 & LS4530 G3 RTLS Portal

This is a portal that combines a passive reader with two antennas and an active low frequency exciter. This portal will trigger active tags, but to successfully read the active tags it must be used in combination with LS4550 or LS4550 G2.

A.2.3. LS4550 & LS4550 G3 RTLS Portal

This is a portal that combines a passive reader with two antennas, an active low frequency exciter and an active UHF reader. This portal can read both active and passive tags. It can also read active tags that are excited by a nearby LS4550 or LS4530 portal (or one of their G3 versions).

A.3. Identifying RTLS portal on packing label



Figure 3. Packing label with RTLS model.

A.4. Unpacking RTLS portal – what's in the box

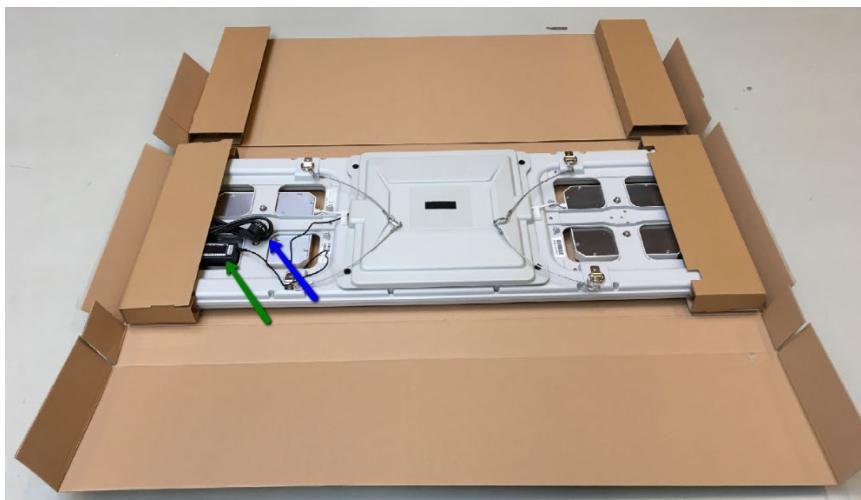


Figure 4. RTLS portal box content with powers supply (green arrow) and power cable (blue arrow).

A.5. Recognizing RTLS models

All three models of the RTLS portals look similar on the outside. The model can be identified from the front label – refer to the illustration below.

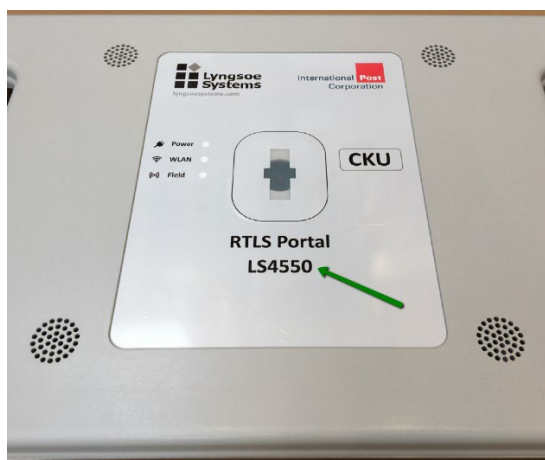


Figure 5. RTLS model identification

A.6. License plate

The RTLS portal is equipped with a license number. On the front the 3-character license plate number is displayed.

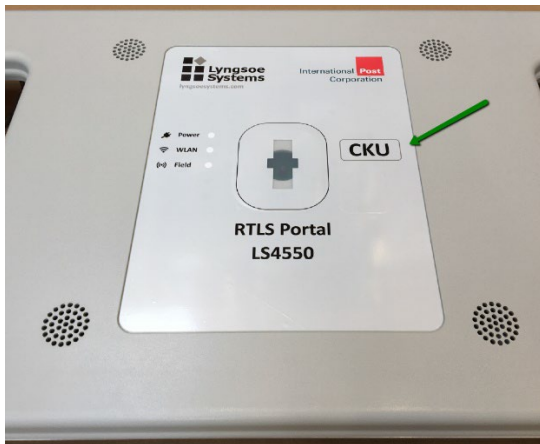


Figure 6. RTLS license plate number on front

On the back the full license plate number with barcode is placed.



Figure 7. RTLS license plate barcode on back

A.7. RTLS orientation

The RTLS portal must be mounted in a specific direction. The direction is described in the site survey with reference to the front label and its position of the logos.

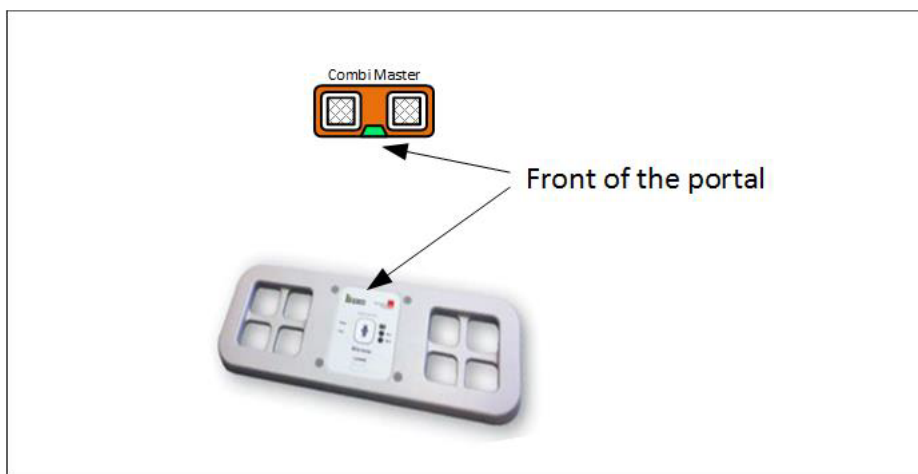


Figure 8. Portal orientation.

A.8. RTLS Hanging Kit

RTLS portals come with a hanging kit that consists of four flexible wires attached to the corners.



Figure 9. Portal hanging links.

A.9. RTLS power

RTLS portals come with connected power supply and power cord.

Place the power supply on the portal lid. Plug the cable into the power supply.

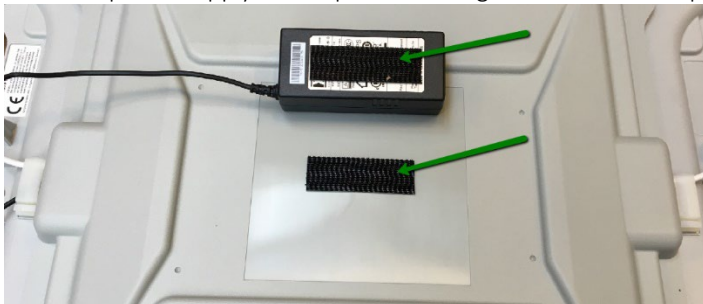


Figure 10. RTLS Power supply and cord

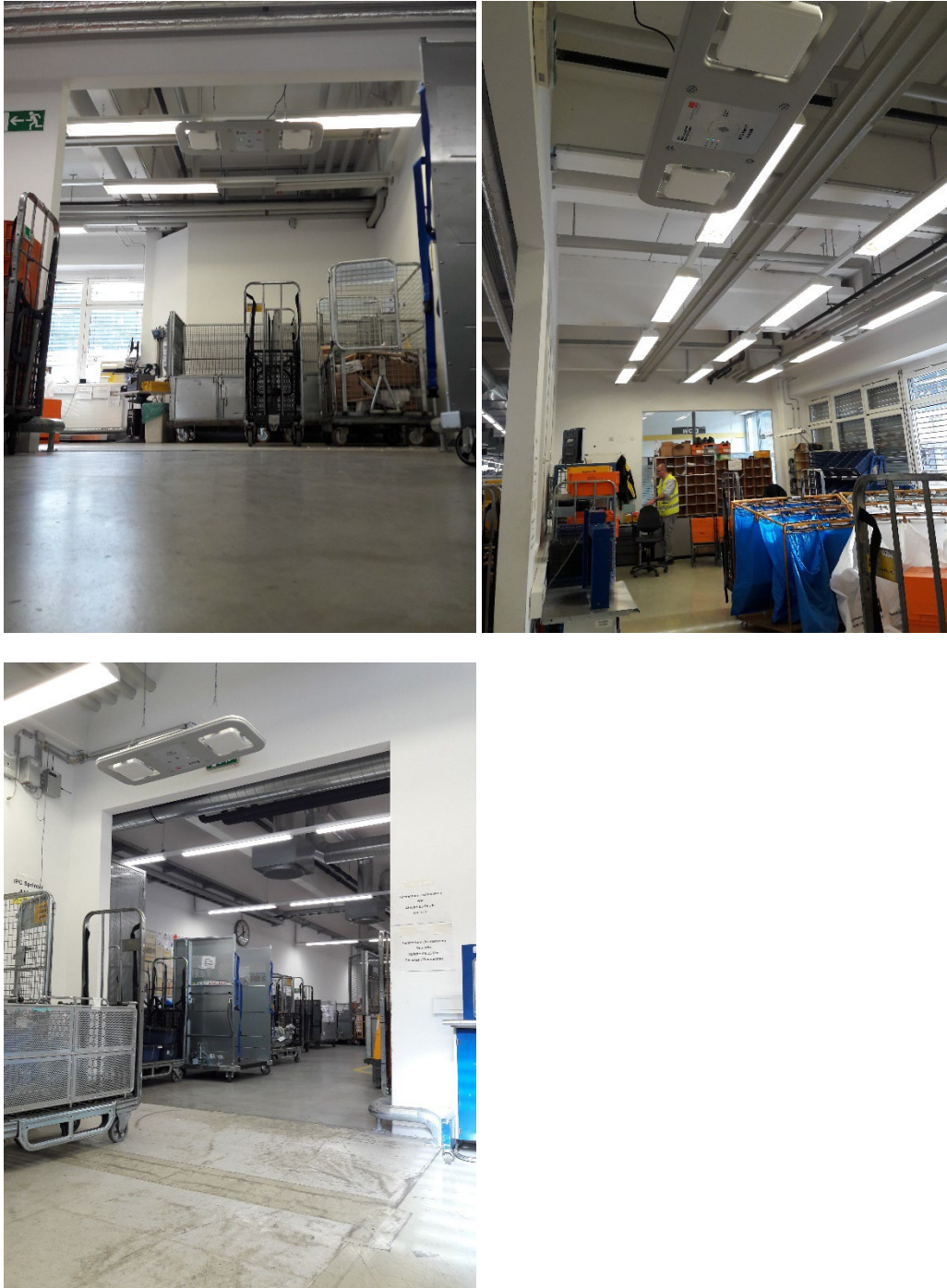
The RTLS portal is now ready for installation.

ANNEX B. SITE PICTURES

When taking pictures of the installation it is important that the picture illustrate the equipment and the surroundings. The purpose is both to be able to identify the portal and to see if any installations or equipment might affect the performance of the equipment. Take more pictures, if one picture is not sufficient to document the installation.

Good pictures:

Here three pictures of the same portal are taken from various positions.



RTLS Installation Guide

Poor pictures:

Here the surrounding e.g. the dock floor / ramp is not visible, and there is only one picture of each device.



ANNEX C. TEST TAGS

Test tags can be provided by Lyngsoe. A test tag batch is normally consisting of:

- 15 Active RFID tags
- 3 Test cartons with a total of 140 passive RFID tags.

The cartons are to be unfolded before they are used in the test and should not be placed directly on metal surfaces.



Figure 11. cartons with passive test tags.



Figure 12. Unfolded carton with passive test tags.



Figure 13. A roll cage with test tag cartons placed on a plastic box.

The test should be carried out as per the instruction given in the Installation and Test tool.

ANNEX D. REGULATORY INFORMATION

Communication Regulation Information

Contact info@lyngsoesystems.com regarding regulatory approval information.

Innovation, Science and Economic Development Canada:RSS-247

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation,

Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

- (1) This device may not cause interference.
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

- 1) L'appareil ne doit pas produire de brouillage;*
- 2) L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.*

To comply with IC RF exposure limits for general population/uncontrolled exposure, the antenna(s) used for this transmitter must be installed to provide a separation distance **of at least 55 cm** from all persons and must not be colocated or operating in conjunction with any other antenna or transmitter.

Au but de conformer aux limites d'exposition RF pour la population générale (exposition non-contrôlée), les antennes utilisés doivent être installés à une **distance d'au moins 55 cm** de toute personne et ne doivent pas être installé en proximité ou utilisé en conjonction avec un autre antenne ou transmetteur.

Federal Communication Commission (FCC) Interference Statement

EMC FCC 47 CFR, Part 15

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. During installation, please follow the steps outlined in the ITT (Installation and Test Tool).

“To comply with FCC’s RF radiation exposure requirements, the antenna(s) used for this transmitter must be installed such that a **minimum separation distance of 55cm** is maintained between

the radiator (antenna) & user's/nearby people's body at all times and must not be co-located or operating in conjunction with any other antenna or transmitter."